

Methodology

The Massachusetts BRFSS is a health survey of Massachusetts adults which has been conducted since 1986 and by Abt SRBI since 2008. The survey began as a landline telephone survey; however, starting in 2009, Massachusetts cellular telephone numbers will be included in the survey. In 2010, a mail survey will be conducted in addition to the landline and cellular telephone surveys. To better address state-specific needs, the Massachusetts BRFSS sample has consisted of three survey splits since 2000. Each split contains state-added questions or optional CDC modules about health topics relevant to Massachusetts residents. To preserve the quality of the data, CDC requires states that implement multiple survey splits to have a sample size of at least 2500 respondents per split; Massachusetts has exceeded this recommended sample size each year since the implementation of multiple survey splits.

This methodology is designed to more efficiently and validly reach the population of Massachusetts to provide population estimates of health conditions and behaviors. Details about the methodology of the landline survey and the cellular telephone survey are below.

Landline Survey

The landline health survey is a random-digit-dial (RDD) telephone survey of non-institutionalized Massachusetts adults residing in households with telephones. The sampling of the survey population involves a list-assisted, stratified RDD sampling frame, which assures that Massachusetts households with telephone numbers assigned after publication of the current directories, as well as households with deliberately unlisted numbers, are included in the sample in appropriate proportions. Telephone numbers are randomly selected, and multiple attempts are made to reach each household. To be eligible to participate in the landline telephone survey, a household must be occupied by at least one adult aged 18 and older. Institutions, group quarters, and temporary residences lived-in for less than one month per year are ineligible for the landline survey. In order

to provide estimates of health at the local level, additional interviews are conducted among adults residing in the following major cities in the Commonwealth: Boston, Worcester, Springfield, Lawrence, Lowell, Fall River, and New Bedford.

Once a household is contacted, one adult is randomly selected to complete the interview. No proxy respondents or substitutions are allowed in the event that the selected adult was unwilling or unable to complete the interview for any reason such as language barriers, disability, or lack of availability. In addition to English, the survey is conducted in Spanish and Portuguese. The sample size of the survey has changed over time (See Table 1). In 2008, 20,581 adults completed the survey.

Table 1. Sample size estimates over time									
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sample size	8,149	8,628	7,429	7,580	8,203	8,906	12,726	21,507	20,581

Cellular Telephone Survey

Telephone numbers are randomly selected, and multiple attempts are made to reach each cellular telephone number. To be eligible for the cellular telephone survey, the respondent must be aged 18 or older and must not have a landline telephone. Cellular telephone interviews are completed with respondents 18 and older who answer the telephone and do not have a landline telephone. The cellular telephone survey is currently conducted only in English. As with the landline survey, no proxy respondents or substitutions are allowed in the event that the selected adult was unwilling or unable to complete the interview for any reason such as language barriers, disability, or lack of availability.

Data Analysis

In landline analyses, data are weighted to reflect the probability of selection of a telephone number, the number of adults in a household, and differences in

participation by sex and age. All analyses are conducted using SAS software version 9.1.3. These statistical tools allow us to correctly calculate weighted percents with 95% confidence intervals, which are considered estimates for the adult population in Massachusetts. Since the survey represents a random sample of the population, and not a complete census, 95% confidence intervals provide a range of values that most likely contain the true percent estimates for the population.

Limitations

There are some limitations that should be considered when interpreting results from the BRFSS. Households that do not have a telephone do not have the opportunity to participate in the survey. Although only 2% of Massachusetts households lack a telephone, almost 10% of households living below poverty lack a phone based on 1990 Census data. For this reason, Massachusetts will begin to conduct a mail survey in addition to the telephone surveys in 2010. In addition, approximately 8% of Massachusetts households have only cellular telephones; for this reason, interviews will be conducted with respondents who use only cellular telephones in addition to the landline survey starting in 2009. More detailed limitations for the landline survey and cellular telephone survey are below.

Landline Survey

A substantial percentage of households contacted to participate in the landline BRFSS do not complete the survey. Although households are telephoned on repeated occasions, interviewers are not always able to reach the randomly selected adult in the household. In addition, some adults contacted do not agree to participate in the survey. To the degree that respondents who participated in the survey differed significantly from those not included in the survey, bias is present in the results. The weighting of the data partially takes into account this non-response.

Cellular Telephone Survey

A substantial percentage of people with cellular telephone numbers contacted to participate in the BRFSS do not complete the survey. In addition, more time may be spent to obtain a complete cellular telephone interview due to the fact that the use of computerized auto-dialing when trying to contact cellular telephone numbers is currently prohibited by law, and thus each number must be dialed by hand. For some cellular telephone numbers with a Massachusetts area code, the respondent may live outside of Massachusetts and thus that respondent's data is not analyzed with the data for respondents living in Massachusetts. Data quality may also be affected if cell phone users limit their openness or alter answers depending on the environment in which he or she is completing the interview. Although respondents are telephoned on repeated occasions, interviewers are not always able to reach the respondent. In addition, some adults contacted do not agree to participate in the survey.

General Limitations

All data collected by the BRFSS are based on self-report from the respondents. By its nature, self-reported data may be subject to error for several reasons. An individual may have difficulty remembering events that occurred a long time ago or the frequency of certain behaviors. Some respondents may over report socially desirable behaviors, while underreporting behaviors they perceive to be less acceptable. Finally, because the BRFSS surveys a randomly selected sample of Massachusetts adults, these results may differ from another random sample to some extent simply due to chance.

Persons with the most severe limitations and with certain disabilities are not represented in this sample since individuals living in institutions are not included in the BRFSS. BRFSS methodology also precludes anyone from assisting respondents in completing the interview if the selected adult had difficulty in participating for any reason, such as an intellectual or developmental disability. In addition, persons not included were those who are hearing impaired, have

cognitive, speech, and other communication impairments, have limited physical stamina, or could not get to the telephone.